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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/619,738	07/19/2000	Victor B. Sapozhnikov	I69.12-0432	2615

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EXAMINER

LAVILLA, MICHAEL E

ART UNIT	PAPER NUMBER
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1775

10

DATE MAILED: 07/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/619,738

Applicant(s)

SAPOZHNIKOV, VICTOR B.

Examiner

Michael La Villa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 28 January 2003 and 2 and 13 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, corresponding to currently pending Claims 21-40, in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:
4. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
5. Claims 21-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In each of independent Claims 21, 27, and 35, reference is made to "an uneven growing film topography." It is unclear where this claimed limitation is disclosed in the originally filed Specification or claims. In each of independent Claims 21, 27, and 35, reference is made to each of the plurality of layers that is deposited on the growing film topography having ballistic separation of deposited components. It

is unclear where this claimed limitation is disclosed in the originally filed Specification or claims.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:
7. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
8. Claims 21-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
9. Regarding Claim 21, it is unclear what is meant by the phrase "deposited from a different direction at a different deposition angle." Is "direction" defined by "deposition angle," or is it a separate parameter? If these are separate parameters, it is unclear what is the definition of "different direction." It is unclear what is meant by the phrase "growing film topography." Does "growing" refer to the process of forming the thin film structure or does it characterize what is to happen on the substrate, namely, growing the thin film structure? If the former, does it imply that subsequent atomic layers have increasing ballistic separation? It is unclear what defines "ballistic separation" when more than two components are present.
10. Regarding Claim 26, it is unclear what is meant by the phrase "wherein angles formed between the deposition angles of pairs of the at least two components are in a range of about 90° to about 180°." Applicant's definition of "deposition

angle" limits the value of this angle to 0 to 90°. Hence, it is unclear how the claimed range of differences could be obtained.

11. Regarding Claim 27, it is unclear what is meant by the term "direction" in the phrases "first direction" and "second direction." It is unclear what is meant by the phrase "growing film topography." Does "growing" refer to the process of forming the thin film structure or does it characterize what is to happen on the substrate, namely, growing the thin film structure? If the former, does it imply that subsequent atomic layers have increasing ballistic separation?
12. Regarding Claims 28 and 29, it is unclear what is meant by the designation of negative angle values, as applicant's definition of deposition angle does not appear to invoke negative angle values.
13. Regarding Claim 32, it is unclear what is meant by the phrase "wherein an angle formed between the first and second deposition angles is in a range of about 120° to about 180°." Applicant's definition of "deposition angle" limits the value of this angle to 0 to 90°. Hence, it is unclear how the claimed range of differences could be obtained.
14. Regarding Claim 34, it is unclear what is meant by the term "direction," and so it is unclear how oppositeness of first and second directions can be determined.
15. Regarding Claim 35, it is unclear what is meant by the term "direction" in the phrases "first direction" and "second direction." It is unclear what is meant by the term "direction," and so it is unclear how oppositeness of first and second directions can be determined. Applicant has defined "deposition direction" as to

be measured with respect to a vertical line. Unlike the other independent claims which define "deposition angle" as to be an angle measured from the vertical, applicant does not define what is to be measured with respect to the vertical to ascertain "deposition direction." It is unclear what is meant by applicant's "deposition angle." It is unclear what is meant by the phrase "growing film topography." Does "growing" refer to the process of forming the thin film structure or does it characterize what is to happen on the substrate, namely, growing the thin film structure? If the former, does it imply that subsequent atomic layers have increasing ballistic separation?

16. Regarding Claims 36 and 37, it is unclear what is meant by the designation of negative angle values, as it is unclear what is applicant's definition of deposition angle.
17. Regarding all of the claims, it is unclear whether applicant considers the claimed deposition method steps to be limited to vapor deposition method steps.

Specification

18. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o).
Correction of the following is required: Particularly with reference to the independent Claims 21, 27, and 35, the claimed subject matter does not appear to be described in the Specification in the same manner as being claimed. If applicant believes otherwise, applicant should point out specific portions of the Specification that use the same language as is being used in the pending claims.

Claim Rejections - 35 USC § 102

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

20. A person shall be entitled to a patent unless –

21. (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

22. Claims 21-40 are rejected under 35 U.S.C. 102(b) as being anticipated by

Applicant's Admissions. Applicant's admissions at page 2, first two paragraphs, discloses that atomic scale self-assembled structures having the claimed laterally modulated composition films are known in the prior art.

23. Claims 21-40 are rejected under 35 U.S.C. 102(b) as being anticipated by

Applicant's Admissions. Applicant's Admissions at page 1, final paragraph, discloses that photolithographic laterally modulated composition films have been created, albeit not at atomic scale resolution.

24. Claims 21-40 are rejected under 35 U.S.C. 102(b) as being anticipated by

Mirecki et al. in MRS Bulletin. Mirecki et al. teaches a lateral composition modulated thin film (see Figures 1(b), 2, 5, and 6 and corresponding discussion in Mirecki et al. in MRS Bulletin).

25. Claims 21-40 are rejected under 35 U.S.C. 102(b) as being anticipated by

Bertero et al. USP 5,660,930. Bertero et al. teaches a multilayered magnetic medium wherein repeating units of [Pt/Co/Pt/Pd] are deposited (see Figures 1 and 2; col. 5, line 38 through col. 6, line 49; col. 8, lines 55-67; and Claims in Bertero et al.). While the deposition is described as forming a vertically

modulated film, the claimed lateral modulation is achieved by rotating by ninety degrees to obtain lateral modulation.

26. Claims 21-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Chambliss et al. USP 5,858,455. Chambliss et al. teaches a iron/silver laterally modulated composition deposited on a Mo substrate by deposition in two different directions (see Figures 4-8; and col. 5, line 55 through col. 7, line 2 in Chambliss '455).

27. Claims 21-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Iwatsuka et al. USP 5,245,471. Iwatsuka teaches a polarizer comprised of a laterally modulated composition formed by a photolithographic technique (see Figures; col. 5, line 30 through col. 6, line 68; col. 8, line 52 through col. 9, line 45; and Claims in Iwatsuka et al.).

28. It is recognized that except, perhaps, for the rejection over Chambliss USP 5,858,455, the claimed process limitations are not disclosed in the applied prior art teachings. However, rejection is deemed appropriate, since it would appear that articles formed by the claimed process limitations would appear to encompass the prior art structures.

Response to Amendment

- I. In view of applicant's arguments, applicant traverses the section 112, first paragraph rejections of the Office Action mailed on 28 October 2002. Rejection is withdrawn.

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- II. In view of applicant's arguments and amendments, applicant traverses the section 112 second paragraph rejections of the Office Action mailed on 28 October 2002. In view of the amendments, the rejections are withdrawn in favor of those presented above for the reasons given above.
- III. In view of applicant's arguments and amendments, applicant traverses the section 102 rejection over Applicant's Admissions, over Mirecki, over Bertero, over Chambliss, and over Iwatsuka of the Office Action mailed on 28 October 2002. While applicant has not specifically traversed these rejections in view of the claim amendments, as each cited reference contains what can be described as laterally modulated structures, it would appear that the rejections are appropriate. The claimed process limitations do not appear to necessarily preclude encompassing these prior art articles.

Conclusion

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael La Villa whose telephone number is (703) 308-4428. The examiner can normally be reached on Monday through Friday.

30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone

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numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

31. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Michael La Villa
July 28, 2003

A handwritten signature in black ink, appearing to read 'La Villa', written in a cursive style.